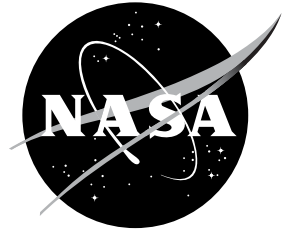


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**Statement of
Sean O'Keefe
National Aeronautics and Space Administration**

before the

**Commission on the Future of the US Aerospace Industry
May 14, 2002**

I appreciate the opportunity to appear before the Commission today in my capacity as NASA Administrator. My objective throughout my stewardship of this storied Agency is to ensure that all are fully aware of our accomplishments, our current efforts and our plans for the future. My job as Administrator is to remind everyone of what NASA does and what we are capable of doing. It's a responsibility I take very seriously. I believe we are at a crossroads in NASA's history. We have an opportunity here and now to reinvigorate the Agency's agenda and renew the entrepreneurial spirit present at NASA's beginning - a continued characteristic of American culture.

The President's FY 2003 budget proposal for NASA of \$15.1 billion reflects the Administration's commitment to NASA's core research efforts and its fundamental mandate to advance aeronautics and aerospace science and technology. This budget initiates exciting new efforts in the realms of space transportation and propulsion. It builds upon our abilities to measure and understand our home planet and the natural - and unnatural - forces that shape our environment. I believe it is a well-balanced and progressive budget that allows us to set the stage for the future.

In the five months since my confirmation, I have traveled across the country to visit each of our 10 Centers to meet NASA's dynamic workforce and have seen firsthand the remarkable science and technology efforts that are the underpinning of our endeavors. In this relatively short period of time, the Agency has taken a fresh look at the long-term management, resource, and technical challenges while continuing to expertly carry out highly complex day-to-day operations. Together we have charted a vision and mission that I look forward to sharing with you this morning.

My testimony today will focus on the talent and technology that is embedded in the NASA organization, the challenges we face, and, more importantly, especially for the Commission

and the task before you, the steps we will take as an Agency to chart a clear course for the future. We are intent on continuing the gains made over 44 years while pushing the edge of the envelope of what appears today to be impossible. NASA today is working together, as one Agency, committed to a clear vision and refined mission that will serve as the blueprint for service to America.

What NASA needs now is a roadmap to continue our work in a more efficient, collaborative manner. I first outlined this roadmap for NASA on April 12 at the Maxwell School of Citizenship and Public Affairs, Syracuse University. NASA's imperative is not only for the sake of knowledge - it is for our future and our security. I have introduced a new strategic framework and vision for NASA. It is a blueprint for the future of exploration. It is a roadmap for achievement that we hope will improve the lives of everyone in this country and everyone on this planet.

That is a bold statement, I know. But, I am confident in saying this because the unique work that NASA does truly touches all of our lives.

This is NASA's vision for the future. Our mandate is:

To improve life here; To extend life to there; and, To find life beyond. This vision is much more than carefully arranged words; it frames all that we do and how we do it.

So, how do we get to that impressive picture of the future? The answer is by executing NASA's mission:

To understand and protect our home planet; To explore the Universe and search for life; and, To inspire the next generation of explorers as only NASA can.

To understand and protect our home planet, NASA develops and employs the technology to make our nation and society a better place. We forecast the impact of storms on one continent upon crop production on another continent, track and predict the patterns of mosquito-borne diseases, and study climate, geography and the environment.

NASA's contribution to security comes from increased cooperation and the sharing of imagery and unique technology with the federal agencies charged with the defense of our homeland. Aerospace innovations developed at our centers prevent civilian aircraft from being used as weapons. Improved air traffic control safety systems and engineering that will make future airplanes more efficient and environmentally sound are clear examples of our role in the changing nature of transportation and our Nation's security. Hypersonics and quiet aircraft are efforts to speed transport and, in doing so, bolster the economy.

I have enjoyed my participation in the Partnership Council where we have had the opportunity to increase our collaboration with our national security colleagues. The new technologies and capabilities that will hopefully emerge from this collaboration will enhance our national security and create opportunities for further exciting scientific discoveries. In particular, increased civil-military cooperation is important in the critical area of space transportation. As we develop our respective research programs, we are committed to taking a comprehensive national approach to lowering the cost and increasing the reliability of U.S. Access to space.

Our mission's second theme is to explore the Universe and search for life. NASA will exploit advanced technology, robotics, and will eventually use humans to explore and seek the answers and the science behind our most fundamental inquiries: How did we get here? Where are we going? Are we alone? If we are to achieve our ambitious objective of exploring the universe and the searching for life beyond our Earth, be it through flights to Mars or observing faraway planets, we must continue to learn about and overcome the technical hurdles that remain in our quest to answer our most probing questions.

NASA's recent achievements are only the beginning of the Agency's role in rewriting tomorrow's textbooks for America's children, as well as for today's astronomers and astrophysicists alike.

When NASA was created almost 44 years ago it was given a Star Trek-like mission, 'to go where no one has gone before'. And, we have done that. Most of NASA's missions are very unique. They have never been done before and may never be done again. They also challenge the limits of our technology. Many missions have only been possible as a result of major technology breakthroughs in areas such as power, propulsion, light weight structures and science instruments. NASA's future will also depend on major technology breakthroughs. However, future generations of NASA missions may be less dependent on traditional technology and more dependent on new emerging technology.

Over the past few years there have been amazing fundamental breakthroughs in our understanding of phenomenon at the atomic scale, in bio-chemistry and micro-biology and in information sciences. In response to opportunities emerging from the fast pace of scientific discovery, NASA has been investing more in the areas of information technology, nano-technology and biotechnology. These technologies will eventually lead to the ultimate in miniaturization – at the atomic scale, processes that mimic biology in their ability to adapt, reconfigure and self-heal; and systems with a high degree of autonomy capable of performing truly intelligent functions such as science planning and data analysis. These technologies are a critical element of NASA's new Aviation Blueprint. High strength materials, with embedded sensors and actuators will enable morphing for optimal aerodynamic performance and health-monitoring for safety and security. Advances in information technology are critical to do exceptional science and exploration at much lower cost. And, solar cells based on nano-scale technology may be twice as efficient, and much cheaper, than the best available today. These are not technologies that will produce result tomorrow, but they are key to realizing capabilities needed a decade from now.

If we are to achieve the mission of exploring the universe and searching for life, there is much we must still learn and many technical challenges that must be conquered. Today's chemical energy rockets that have been the engine of exploration since the inception of space travel are today at the limit of what they can deliver. Using current technology, if we were to embark to explore Pluto in 2006, the earliest we could arrive there is 2014- 2016; and then, upon our arrival, we would only be able to obtain meaningful research for 4-6 weeks. That is an 8-10 year travel period for 4-6 weeks of science. NASA's FY 2003 budget includes nearly \$1 billion for a nuclear systems initiative as a first step in addressing this challenge. Nuclear propulsion is a mature technology that has been used safely by the U.S. Navy since 1955. Since that time, the Navy has sailed over 120 million miles encompassing 5,000 reactor years without incident. This technology may hold the key to overcoming the time/distance challenge, and its application to space travel has great potential.

Propulsion is only one of the challenges facing further human exploration of space. Still unknown are the long-term effects of radiation and exposure to a microgravity environment on humans. The FY 2003 budget includes funding for a new initiative for space radiation research. Our third mission objective is to inspire the next generation of explorers. America looks to NASA to build an unequalled scientific base of knowledge and motivate our youth to embrace math, science and engineering. While opportunities in the technology sector are expected to quadruple this decade, the pool of college students enrolled in science and engineering courses continues to decline. NASA has an obligation to the nation and its own workforce to reverse this trend.

NASA faces similar challenges with its scientific and engineering workforce. During one of my recent Center visits, I found that only 62 engineers out of a 3,000-person workforce were less than 30 years old. In fact, as an Agency, our over-60 population is three times larger than the under-30 workforce. There are certainly benefits to having an extremely experienced workforce in terms of overall capability. There is, however, a significant downside; almost one-third of NASA's workforce will be eligible to retire within the next 3-5 years.

We must aggressively deal with this leadership and workforce challenge. NASA is working to develop a series of legislative provisions that address this challenge head-on. These provisions will complement the Administration's Managerial Flexibility Act. This Act would establish a process for expedited congressional consideration of Presidential proposals to eliminate or reduce barriers to efficient Government operations through the repeal or amendment of laws that create obstacles to efficient management or the provision of new authority to agencies. I hope the Commission will endorse this Act and the related proposals as necessary tools that need to be enacted into law.

Students are only part of the education equation at NASA. Our Nation's educators are also a critical component of NASA's revitalized education focus. Teachers at all levels already possess the skills to inspire and plant the seeds necessary for this Nation to grow the next generation of science and technology leaders. NASA can best introduce itself and the science that it represents into the classroom by teaming up with educators, especially at the younger grade levels.

Inspiring future generations works in synergy with NASA's mission to protect our home planet. The U.S. Commission on National Security for the 21 st Century (the Hart-Rudman Commission) concluded that advances in technology and changing economies mandate an increase in the level of technology literacy across society. It is clear that technological human capital is an essential component of our national security equation.

Our mission concludes with the statement, " as only NASA can." Our Agency is one of the Nation's leading research and technology Federal agencies with unique tools, capabilities and expertise that represent a National asset. The Agency contributes to America in a broad spectrum of areas. Medical technologies, aerospace innovations, spin-offs, nano-technologies, and countless commercial applications are rooted in NASA discovery. Our commitment to the American taxpayer is to continue providing a direct and very tangible means of improving life on our planet. Extending life beyond the reaches of our earth is not a process driven by any particular destination, but by science that will contribute to the social, economic, and intellectual growth of our society.

NASA provides a constant return on taxpayer dollars with each new discovery, telescope picture, launch, patent, and newly inspired child or adult. That being said, none of the ambitious plans that I have detailed for the Agency will take root if we fail to improve the management of our resources, commit to fiscal responsibility, and establish a clear set of priorities. A clear vision and integrated mission are important foundations for NASA's future success, but success requires that we embrace a wide variety of tools to move us forward.

Mr. Chairman, I believe the vision, mission, programs, initiatives and budget I have described represent a strong commitment to a healthy and forward-moving NASA. I believe it is deserving of the Commission's strong support and I look forward to working with the Commission.

I have mentioned the opportunity I have had to meet the men and women of NASA, working in our installations across this land. We have a diverse and resilient workforce, and they are proud and excited about the work they are doing. They are our greatest assets and I believe our greatest hope for the future of this Agency. They have shown me their desire to be a part of the work contributing to even greater meaning in the larger dreams represented by this Agency. Their eagerness and dedication and the strength of their resolve tell me that we can achieve what we have set out to accomplish - and more.

Thank you.

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